



MARK A. YOUNG
EXECUTIVE DIRECTOR

LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING LOWELL
CHELMSFORD
DRACUT
TEWKSBURY
TYNGSBORO

January 14, 2021

RE: MA0100633

To Whom It May Concern:

The following is an itemization of status and improvements for the Lowell Regional Wastewater Utility during December 2020. Enclosed is a copy of the Discharge Monitoring Report, Down Stream Notification Reports, and required NPDES permit monitoring data for this period.

The Discharge Monitoring Report is being submitted electronically through the Environmental Protection Agency NetDMR website and also via email to the Massachusetts Department of Environmental Protection.

PERMIT EXCEEDANCES:

- There were no permit exceedances for the month of December 2020.

PROCESS CHANGES AND IMPROVEMENTS:

- The primary and secondary clarifiers are undergoing a complete upgrade as part of the phase 2B construction project. This has limited flow through the facility and impacted wet weather flow capacity.
 - Primary Clarifier No.5 was taken offline, 12/11, for constructed related repairs and returned to service 12/24.
 - Primary Clarifier No.6 was taken offline, 12/9, for constructed related repairs and returned to service 12/25.
- Anoxic periods in the last cell of the aeration trains were disabled on 11/10 for the winter season. With the seasonal process change it is no longer necessary for NO₃ control.
- As of 11/12 all aeration tanks are online. All aeration tanks are needed for biological inventory and sludge management in the colder weather.
- The sludge pumping system is being overhauled as part of the phase 2B construction project. As of November all new septage and thickened primary sludge pumps are installed and in service. This upgrade will help ensure stable and reliable sludge pumping to the centrifuge is available.
- The sodium bisulfite feed system is being upgraded as part of the Phase 2B construction project.
 - The old bisulfite feed system is being used until issues with the new feed system are resolved. It is projected that the new system will be online by February 2021.

- The Utility has begun to test an automated secondary bypass chlorination system. The system will dose chlorine into the bypass line during a secondary bypass. This will allow for additional chlorine contact time for bypassed flow.

ODOR COMPLAINTS:

- There were no reported odor complaints during this period.

Respectfully,

A handwritten signature in black ink, appearing to read 'Aaron Fox', with a stylized flourish at the end.

Aaron Fox, Operations Manager
Lowell Regional Wastewater Utility
First St. Blvd. (Rt. 110)
Lowell MA 01850

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

DISCHARGE MONITORING REPORT (DMR)

OMB No. 2040-0004

NAME: LOWELL REGIONAL WW UTILITY

ADDRESS: 451 FIRST ST BLVD

LOWELL, MA 01850

FACILITY: LOWELL REGIONAL WW UTILITY

LOCATION: 451 FIRST ST BLVD

LOWELL, MA 01850

ATTN: AARON FOX, OPERATIONS MANAGER

MA0100633

PERMIT NUMBER

035-A

DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

TREATED EFFLUENT

External Outfall

MONITORING PERIOD

MM/DD/YYYY

12/01/2020

TO


MM/DD/YYYY

12/31/2020

FROM

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
pH	SAMPLE MEASUREMENT	*****	*****	*****	*****	6.5	*****	7.2	SU	0	01/01	GR
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	6.0 MINIMUM	*****	8.3 MAXIMUM	SU		Daily	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	2,658	7,534	8,239	lb/d	10.4	24.56	24.4	mg/L	0	05/07	24
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	8,006 MO AVG	12,010 WKLY AVG	Req. Mon. DAILY MX	lb/d	30 MO AVG	45 WKLY AVG	Req. Mon. DAILY MAX	mg/L		Weekdays	COMP24
Solids, total suspended	SAMPLE MEASUREMENT	*****	*****	*****	*****	164.6	*****	*****	mg/L	0	05/07	24
00530 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24
TSS % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	93.7	*****	*****	%	0	01/30	CA
	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC
Total Nitrogen	SAMPLE MEASUREMENT	*****	*****	*****	*****	17.82	*****	*****	mg/L	0	01/30	CA
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	CALC
TKN	SAMPLE MEASUREMENT	*****	*****	*****	*****	17.40	*****	*****	mg/L	0	01/30	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	COMP24
NO3,2-N	SAMPLE MEASUREMENT	*****	*****	*****	*****	0.42	*****	*****	mg/L	0	01/30	24
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Monthly	COMP24
Phosphorus, total (as P)	SAMPLE MEASUREMENT	*****	*****	*****	*****	1.24	*****	1.24	mg/L	0	01/30	24
00665 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon MO AVG	*****	Req. Mon. DAILY MX	mg/L		Monthly	COMP24

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			TELEPHONE		DATE	
AARON FOX				978 674-4248		01/12/2021	
OPERATIONS MANAGER		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		AREA CODE	NUMBER	MM/DD/YYYY	
TYPED OR PRINTED							

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Form Approved.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

DISCHARGE MONITORING REPORT (DMR)

OMB No. 2040-0004

NAME: LOWELL REGIONAL WW UTILITY

ADDRESS: 451 FIRST ST BLVD

LOWELL, MA 01850

FACILITY: LOWELL REGIONAL WW UTILITY

LOCATION: 451 FIRST ST BLVD

LOWELL, MA 01850

ATTN: AARON FOX, OPERATIONS MANAGER

MA0100633

PERMIT NUMBER

035-A

DISCHARGE NUMBER

DMR MAILING ZIP CODE: 01850

MAJOR \$

(SUBR E)

TREATED EFFLUENT

External Outfall

FROM

MM/DD/YYYY

12/01/2020

TO

MM/DD/YYYY

12/31/2020

NO DISCHARGE

PARAMETER		QUANTITY OR LOADING				QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE 1	VALUE 2	VALUE 3	UNITS	VALUE 1	VALUE 2	VALUE 3	UNITS			
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT	25.84	32.05	81.10	MGD	*****	*****	*****	*****	0	99/99	RC
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	32 12MO AVG	Req. Mon MO AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDR
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	35.81	*****	190	µg/L	0	01/01	GR
50060 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	196 MO AVG	*****	338 DAILY MX	µg/L		Daily	GRAB
Chlorine, total residual	SAMPLE MEASUREMENT	*****	*****	*****	*****	162.58	*****	760	µg/L	0	99/99	RC
50060 0 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	Req. Mon. DAILY MX	µg/L		Continuous	RCORDR
Ecoli	SAMPLE MEASUREMENT	*****	*****	*****	*****	8.35	*****	73	MPN	0	05/07	GR
Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	126 MO GEO	*****	409 DAILY MX	MPN		Weekdays	GRAB
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	2,050	4,424	9,333	lb/d	7.2	15.24	18.6	mg/L	0	05/07	24
80082 1 0 Effluent Gross	PERMIT REQUIREMENT	6,672 MO AVG	10,675 WKLY AVG	Req. Mon. DAILY MX	lb/d	25 MO AVG	40 WKLY AVG	Req. Mon. DAILY MX	mg/L		Weekdays	COMP24
BOD, carbonaceous, 05 day, 20C	SAMPLE MEASUREMENT	*****	*****	*****	*****	176.8	*****	*****	mg/L	0	05/07	24
80082 G 0 Raw Sewage Influent	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. MO AVG	*****	*****	mg/L		Weekdays	COMP24
BOD % Removal	SAMPLE MEASUREMENT	*****	*****	*****	*****	95.9	*****	*****	%	0	01/30	CA
Effluent	PERMIT REQUIREMENT	*****	*****	*****	*****	85 MINIMUM	*****	*****	%		Monthly	CALC

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
AARON FOX		978 674-4248		01/12/2021
OPERATIONS MANAGER		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		
TYPED OR PRINTED		AREA CODE	NUMBER	MM/DD/YYYY

Lowell Regional Wastewater Utility

NPDES Report (Permit NO. MA0100633)

December 2020

Printed on Tue Jan 12 2021

Page 1 of 2

Date	Weather	Plant Effluent Flow			D.O.	Chlorine Residual	Chlorine Residual Continuous Recording		Plant Effluent pH			E-coli	Effluent CBOD			Effluent TSS		
		Total (MG)	Max. Hourly (MGD)	Min. Hourly (MGD)			Grab (mg/L)	Grab (mg/L)	Avg. (mg/L)	Max. (mg/L)	Min.		Max.	Grab	(cfu/100 ml)	(mg/L)	(lbs)	(% Rem)
01-Tue	Wet	33.92	83.35	23.95	7.5	0.00	0.05	0.08	6.2	6.6	6.5	2	6.0	1,697.6		14.8	4,187.3	
02-Wed	Dry	25.58	29.91	18.30	7.4	0.02	0.04	0.05	6.6	6.7	6.8	15	18.6	3,967.6	90.83	23.4	4,991.5	84.5
03-Thu	Dry	24.86	28.94	18.00	7.3	0.00	0.05	0.06	6.6	6.7	6.7	10	14.0	2,903.1	96.68	16.4	3,400.8	92.7
04-Fri	Dry	23.99	27.47	17.31	7.3	0.18	0.06	0.07	6.6	6.7	6.7	4						
05-Sat	Wet	65.13	101.20	17.15	7.4	0.00	0.09	0.35	6.1	14.0	6.7							
06-Sun	Dry	40.49	76.68	29.80	8.2	0.00	0.10	0.13	6.3	6.6	6.9		13.1	4,423.3	90.15	24.4	8,238.7	84.1
07-Mon	Dry	30.27	35.68	23.32	8.0	0.19	0.08	0.09	6.5	6.6	6.8	12	10.4	2,625.8	96.15	15.4	3,888.3	92.5
08-Tue	Dry	28.56	32.36	21.84	7.8	0.05	0.07	0.08	6.5	6.6	6.9	10	7.4	1,762.4	97.18	10.1	2,405.5	95.9
09-Wed	Dry	28.02	33.15	20.22	8.2	0.00	0.06	0.08	6.5	6.6	7.0	8	8.5	1,986.5	96.79	8.5	1,986.5	94.7
10-Thu	Dry	27.66	31.61	20.77	5.5	0.00	0.06	0.07	6.5	6.6	7.0	6	4.4	1,014.9	97.83	6.6	1,522.4	96.0
11-Fri	Dry	26.75	31.29	19.16	8.0	0.05	0.06	0.07	6.4	6.5	7.0	4						
12-Sat	Wet	33.91	55.39	19.88	8.1	0.00	0.07	0.68	6.4	6.5	7.0							
13-Sun	Dry	29.90	40.01	21.36	7.9	0.01	0.08	0.09	6.3	6.5	6.9		5.0	1,246.9	96.15	6.7	1,670.8	94.8
14-Mon	Dry	27.15	31.04	20.14	8.2	0.00	0.07	0.09	6.5	6.5	7.0	1	5.0	1,132.2	97.66	8.6	1,947.5	95.2
15-Tue	Dry	25.72	29.66	19.28	8.3	0.10	0.08	0.10	6.4	6.5	6.8	1	5.2	1,115.3	97.21	5.9	1,265.4	95.4
16-Wed	Dry	24.86	29.14	18.02	8.1	0.01	0.08	0.09	6.4	6.5	7.0	10	3.8	788.0	97.02	5.1	1,057.6	96.7
17-Thu	Wet	24.38	28.58	18.32	8.9	0.04	0.09	0.13	6.4	6.5	7.1	9	4.1	833.5		5.9	1,199.5	
18-Fri	Dry	24.13	27.87	17.33	8.1	0.04	0.09	0.12	6.4	6.5	7.2	4						
19-Sat	Dry	23.99	30.12	16.77	8.0	0.02	0.10	0.76	6.4	6.5	7.0							
20-Sun	Wet	24.49	31.06	16.10	8.1	0.03	0.10	0.18	6.4	6.5	7.0					7.6	1,552.0	
21-Mon	Dry	24.62	29.68	17.40	8.2	0.05	0.09	0.31	6.4	6.6	7.2	16	7.0	1,437.0	97.60	8.3	1,703.9	97.2
22-Tue	Dry	25.17	29.50	17.40	7.6	0.04	0.08	0.15	6.4	6.5	7.2	30	5.3	1,112.3	96.04	6.5	1,364.2	96.3
23-Wed	Dry	23.94	27.87	17.18	8.2	0.05	0.08	0.09	6.4	6.5	7.2	40	5.3	1,058.1	96.98	7.8	1,557.2	95.9
24-Thu	Dry	28.57	40.17	15.90	8.1	0.04	0.08	0.17	6.4	6.5	7.2	4						
25-Fri	Wet	81.10	103.75	31.88	8.3	0.11	0.09	0.33	6.0	6.4	7.0		13.8	9,333.4				
26-Sat	Dry	41.97	47.43	35.57	8.1	0.01	0.05	0.07	6.0	6.4	7.0	3	3.6	1,260.2	94.73	11.6	4,060.5	95.2
27-Sun	Dry	38.21	44.65	29.88	8.0	0.01	0.06	0.07	6.3	6.4	7.1		4.8	1,529.6	94.70	11.5	3,664.7	93.4
28-Mon	Dry	36.42	41.53	29.34	8.1	0.02	0.06	0.07	6.3	6.4	7.1	17	4.6	1,397.3	95.84	8.5	2,581.9	93.2
29-Tue	Dry	33.94	37.56	27.91	8.3	0.00	0.06	0.08	6.3	6.4	7.1	73	4.6	1,302.0	96.05	8.1	2,292.6	93.5
30-Wed	Dry	32.24	36.95	25.15	8.1	0.04	0.06	0.09	6.3	6.4	7.1	56	4.4	1,183.1	96.07	7.2	1,936.0	93.6
31-Thu	Wet	33.58	42.92	27.67	8.0	0.00	0.08	0.24	6.3	6.4	7.1	10						
Min		23.94	27.47	15.90	5.5	0.00	0.04	0.05	6.0	6.4	6.5	1	3.6	788	90.1	5.1	1,058	84.1
Max		81.10	103.75	35.57	8.9	0.19	0.10	0.76	6.6	14.0	7.2	73	18.6	9,333	97.8	24.4	8,239	97.2
Avg		32.05	41.82	21.69	7.9	0.04	0.073	0.16			7.0	15	7.2	2,050	95.9	10.4	2,658	93.7
Total		993.49										8		45,110			58,475	

Lowell Regional Wastewater Utility

NPDES Report (Permit NO. MA0100633)

December 2020

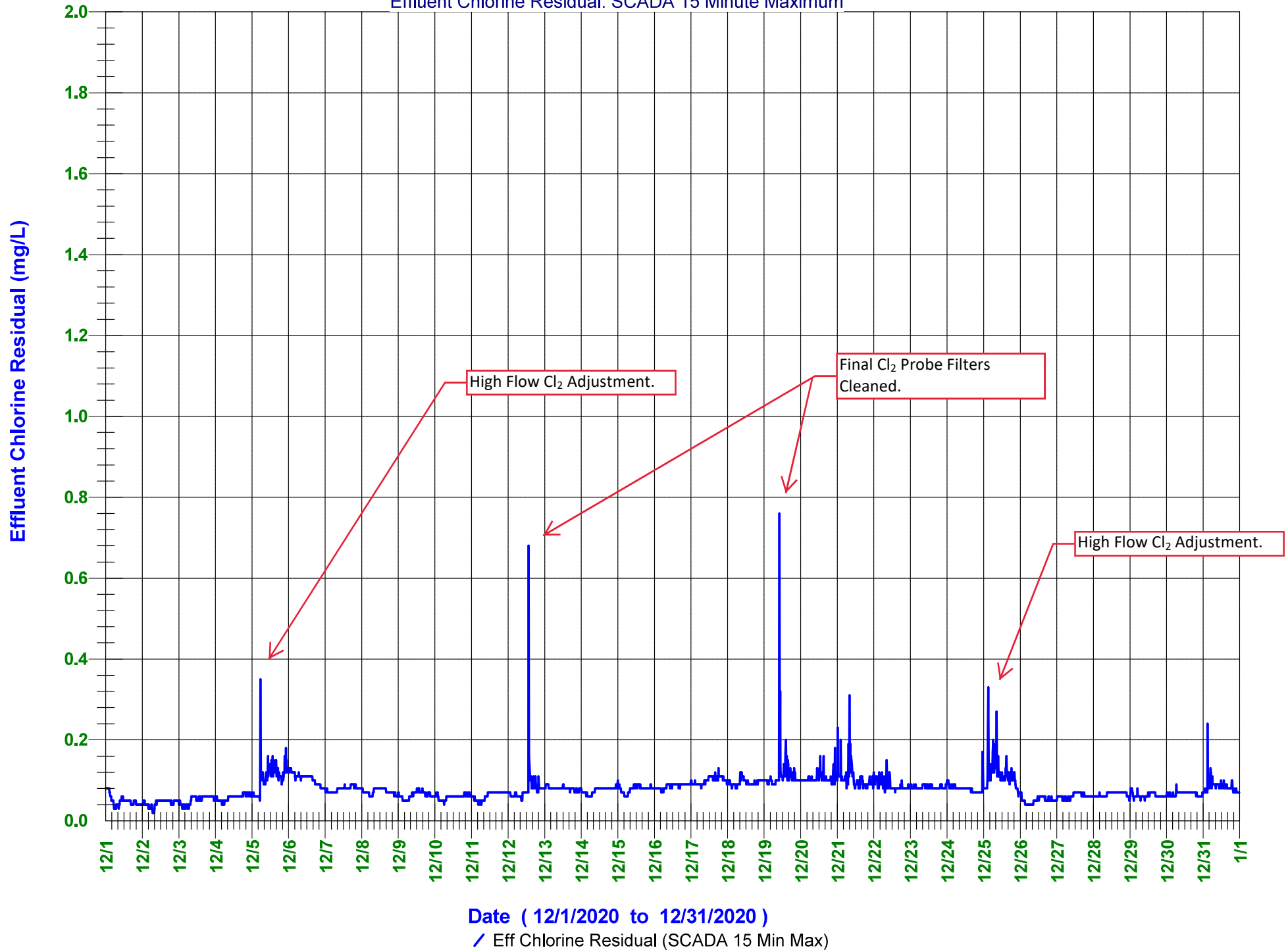
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Date	Total Nitrogen	TKN	Nitrate + Nitrite	Total Phosphorus
	(mg/L)	(mg/L)	(mg/L)	(mg/L)
01-Tue				
02-Wed				
03-Thu				
04-Fri				
05-Sat				
06-Sun				
07-Mon				
08-Tue	17.82	17.40	0.42	1.24
09-Wed				
10-Thu				
11-Fri				
12-Sat				
13-Sun				
14-Mon				
15-Tue				
16-Wed				
17-Thu				
18-Fri				
19-Sat				
20-Sun				
21-Mon				
22-Tue				
23-Wed				
24-Thu				
25-Fri				
26-Sat				
27-Sun				
28-Mon				
29-Tue				
30-Wed				
31-Thu				
Min	17.82	17.40	0.42	1.24
Max	17.82	17.40	0.42	1.24
Avg	17.82	17.40	0.42	1.24
Total	17.82	17.40	0.42	1.24

Lowell Regional Wastewater Utility - MA0100633

Effluent Chlorine Residual: SCADA 15 Minute Maximum



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 5, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
66.60	105.12	109.76

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	1.63	16	0.23	0.06
Duck Island	2.47	19	0.26	0.09

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
16.13	25.93

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)
2.65	3.57

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 5, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			0.05
07:00			0.15
08:00	32	0.49	0.17
09:00	60	1.38	0.26
10:00	60	2.16	0.14
11:00	60	2.35	0.16
12:00	60	2.33	0.15
13:00	60	2.34	0.09
14:00	60	2.35	0.17
15:00	60	2.30	0.16
16:00	60	1.99	0.12
17:00	60	1.77	0.14
18:00	51	0.76	0.25
19:00	52	0.33	0.17
20:00	54	0.72	0.12
21:00	59	1.41	0.08
22:00	60	1.05	0.05
23:00	60	1.10	0.03
24:00	60	1.10	0.01

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00	24	0.63
12:00	24	0.46
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	968	25.93	2.47

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	48	1.09

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 5, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00	31	0.47
11:00	29	0.38
12:00	17	0.13
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	77	0.98

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 5, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			0.06
07:00			0.15
08:00			0.16
09:00			0.23
10:00			0.15
11:00			0.13
12:00			0.15
13:00			0.09
14:00			0.08
15:00			0.03
16:00			
17:00			
18:00			
19:00			0.01
20:00			0.12
21:00			0.10
22:00			0.09
23:00			0.06
24:00			0.02

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00	20	0.70
12:00	10	0.10
13:00	24	0.30
14:00	51	0.40
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
			1.63

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	105	1.50

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 5, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

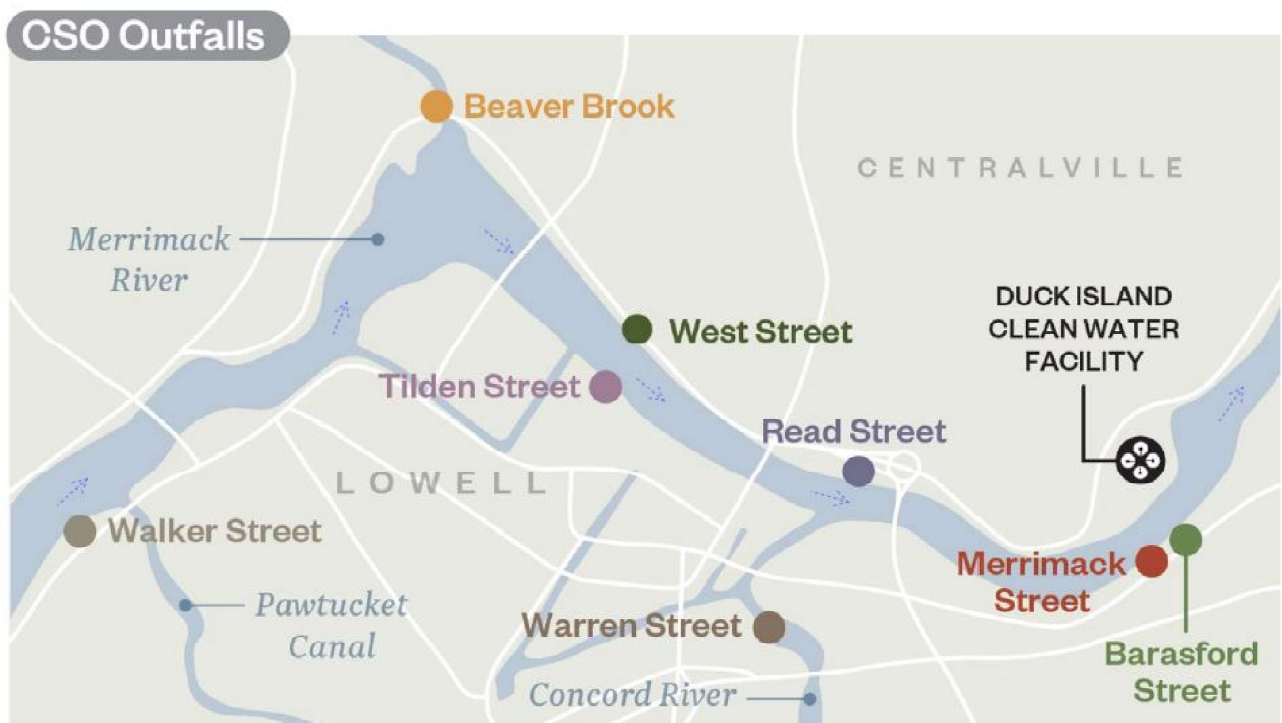
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 6, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
42.06	81.73	81.53

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	0.23	10	0.06	0.02
Duck Island				

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
3.00	2.00

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 6, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00	60	1.03	
02:00	58	0.62	
03:00	56	0.35	
04:00	6	0.00	
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	180	2.00	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 6, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 6, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			0.01
02:00			0.01
03:00			0.01
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			0.02
11:00			0.04
12:00			0.06
13:00			0.04
14:00			0.02
15:00			0.01
16:00			0.01
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
			0.23

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 6, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

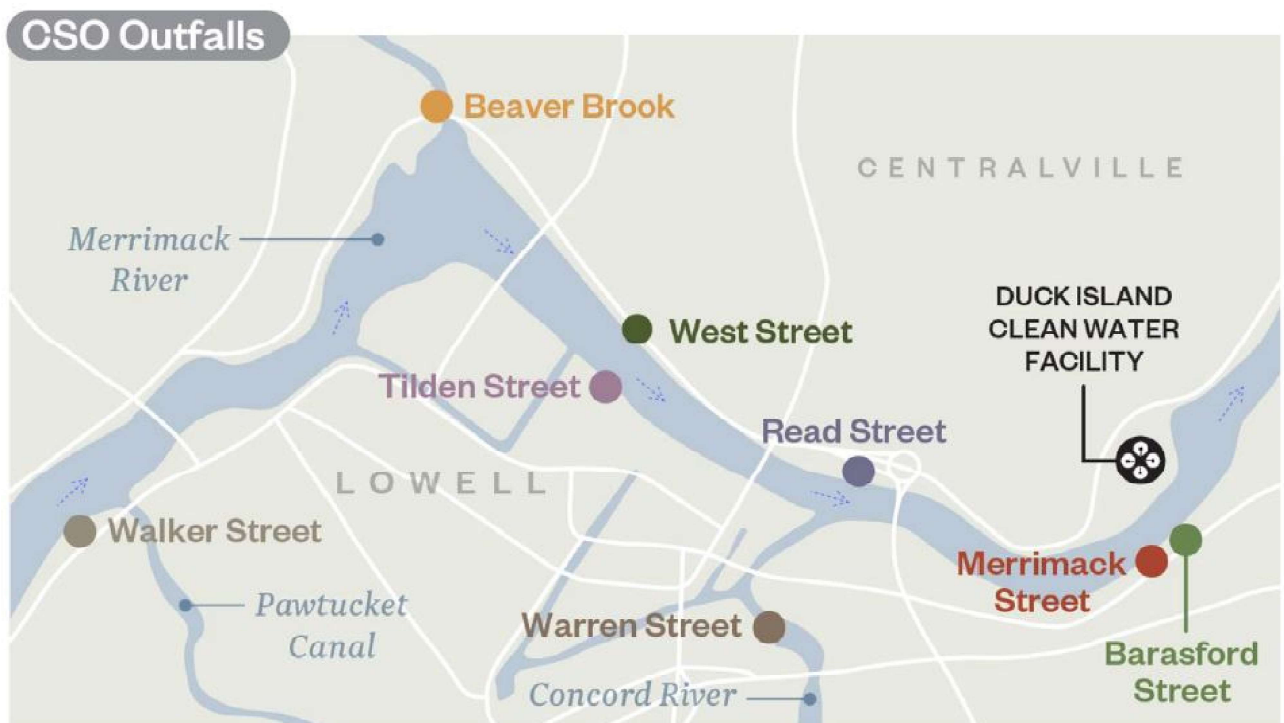
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 12, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
36.60	58.01	58.90

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	0.37	7	0.08	0.04
Duck Island	0.37	7	0.10	0.04

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
5.48	2.46

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 12, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			0.02
15:00			0.05
16:00			0.03
17:00			0.10
18:00			0.08
19:00	34	0.37	0.07
20:00	60	0.58	0.02
21:00	60	0.47	
22:00	60	0.45	
23:00	60	0.40	
24:00	55	0.19	

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	329	2.46	0.37

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 12, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 12, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			0.05
15:00			0.05
16:00			0.03
17:00			0.08
18:00			0.08
19:00			0.07
20:00			0.01
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
			0.37

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 12, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

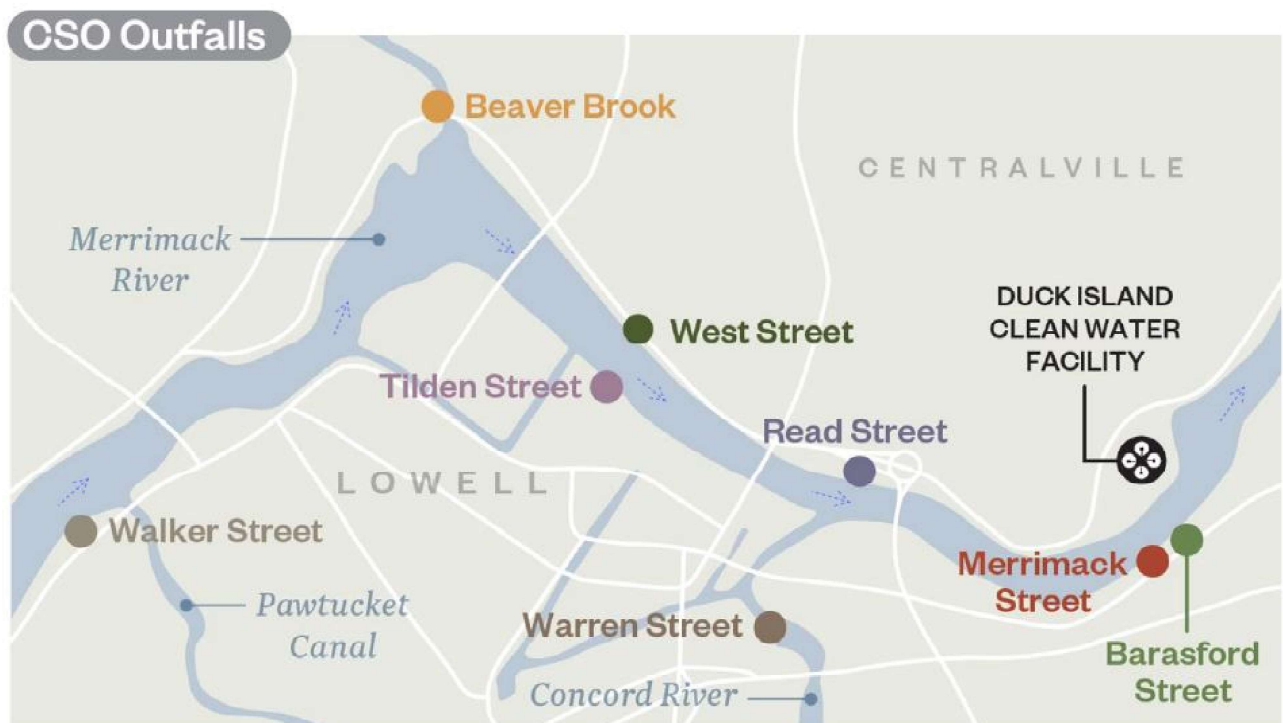
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 13, 2020

Dear Environmental Professionals and Interested Parties:

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Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
31.81	45.22	56.48

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	0.01	1	0.01	0.01
Duck Island				

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
0.27	0.02

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 13, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00	16	0.02	
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	16	0.02	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 13, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sun, Dec 13, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			0.01
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
			0.01

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:
Sun, Dec 13, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

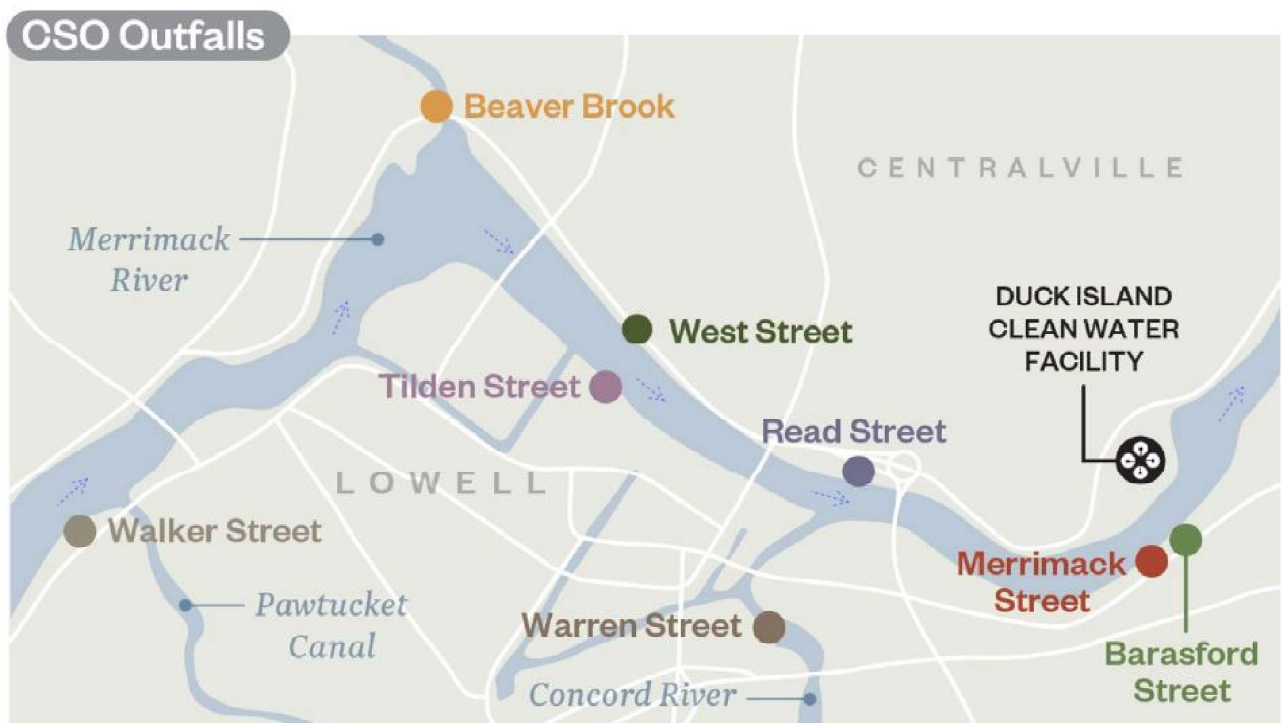
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Dec 25, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
82.23	105.57	120.70

Rainfall				
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	1.73	18	0.32	0.20
Duck Island	1.71	17	0.27	0.16

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
19.97	36.73

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)
8.07	17.93

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Dec 25, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00			
02:00			
03:00			0.05
04:00	19	0.22	0.12
05:00	60	1.18	0.10
06:00	60	1.66	0.17
07:00	60	2.09	0.15
08:00	60	1.96	0.09
09:00	60	1.93	0.27
10:00	60	1.85	0.11
11:00	60	1.78	0.12
12:00	60	2.01	0.07
13:00	60	2.32	0.06
14:00	60	2.26	0.03
15:00	60	2.33	0.07
16:00	60	2.46	0.16
17:00	60	2.29	0.08
18:00	60	2.24	0.01
19:00	60	2.26	0.05
20:00	60	2.19	
21:00	60	1.93	
22:00	54	1.13	
23:00	60	0.45	
24:00	45	0.19	

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00	20	0.59
10:00	25	0.49
11:00	60	1.50
12:00	34	0.73
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	1,198	36.73	1.71

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	139	3.31

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Dec 25, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00	25	0.61
08:00	60	0.37
09:00	30	0.86
10:00	47	1.59
11:00	43	0.49
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00	7	0.09
10:00	32	0.13
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	205	3.92

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	39	0.22

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Dec 25, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			0.06
04:00			0.13
05:00			0.10
06:00			0.17
07:00			0.14
08:00			0.09
09:00	13	0.72	0.32
10:00	20	0.36	0.11
11:00			0.11
12:00			0.06
13:00			0.06
14:00			0.03
15:00			0.06
16:00			0.15
17:00			0.07
18:00			0.02
19:00			0.04
20:00			
21:00			
22:00			
23:00			
24:00			0.01

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00	24	0.90
08:00	28	0.40
09:00	51	1.70
10:00	38	1.70
11:00	49	1.50
12:00	50	0.80
13:00	59	0.90
14:00	44	0.30
15:00	24	0.10
16:00		
17:00	52	0.90
18:00	12	0.20
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	33	1.08	1.73

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)
	431	9.40

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Fri, Dec 25, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

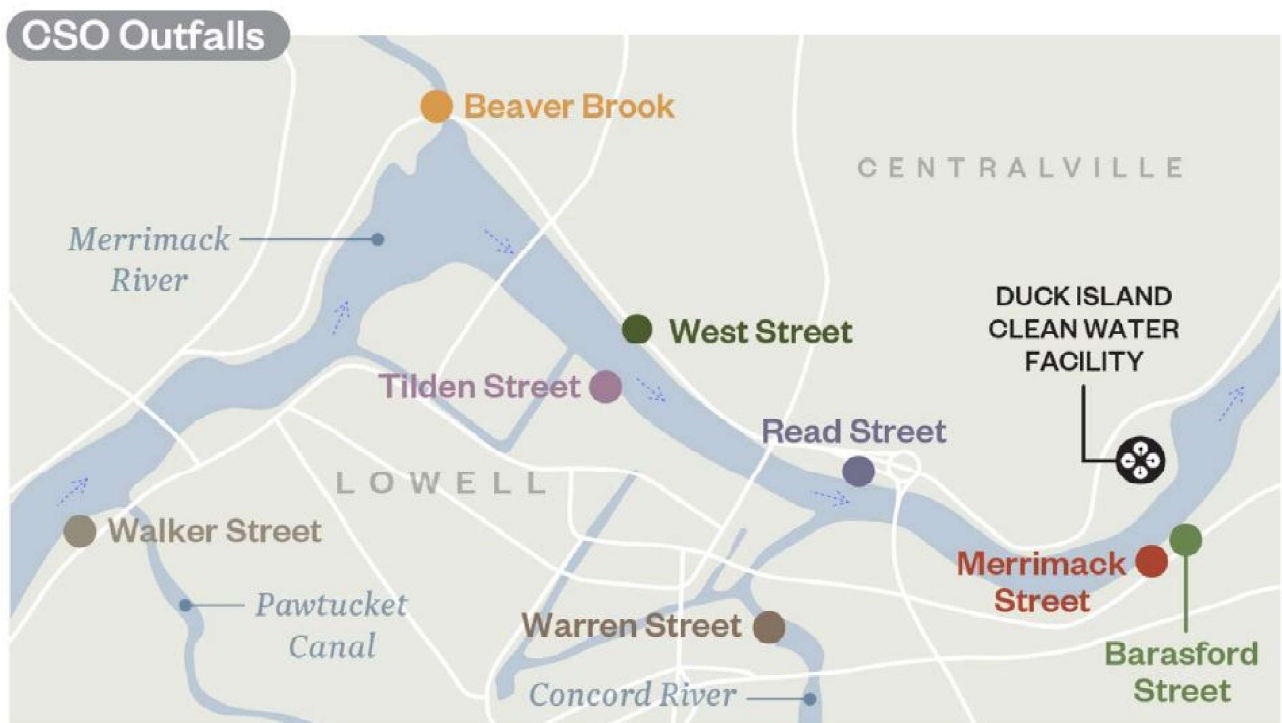
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.



Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 26, 2020

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
44.12	51.40	50.86

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren				
Duck Island				

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
0.50	0.04

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)

Person Reporting Event: Gorden Bergeron - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 26, 2020

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00	30	0.04	
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	30	0.04	0.00

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 26, 2020

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 26, 2020

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			
06:00			
07:00			
08:00			
09:00			
10:00			
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Sat, Dec 26, 2020

Definitions and Abbreviations:

Flow Reporting Terms:

MG:

Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:

Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):

Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):

The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):

The highest flow rate treated at Duck Island at any moment of the day

Duration (Minutes):

Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:

Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):

The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):

The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):

The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):

The number of hours in the day during which it rained.

